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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,484	10/16/2003	Franco Bertora	8240-21	7953
30565	7590	11/29/2005	EXAMINER	
WOODARD, EMHARDT, MORIARTY, MCNETT & HENRY LLP BANK ONE CENTER/TOWER 111 MONUMENT CIRCLE, SUITE 3700 INDIANAPOLIS, IN 46204-5137			JAWORSKI, FRANCIS J	
			ART UNIT	PAPER NUMBER
			3737	

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/687,484

Applicant(s)

BERTORA, FRANCO

Examiner

Jaworski Francis J.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 9-7-04 Dmgs.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: arrays 1,2 mentioned in the specification page 9 lines 9 – 12 are unlabelled in Fig. 7. Additionally Fig. 7 requires labeled representations for boxed components, see 37C.F.R. 1.84(o).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

Claims 1 – 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term 'uniformly' in claim line 5 is vague in the electronic sense absent an internal reference within the claim as to what the commonality of characteristic is. That

is, 'uniformly' may pertain to uniform temporal cadence as in conventional scanning, or it may pertain to a constant uniform amplitude level for an energized transducer grouping (see US5808962 col. 3 lines 36-43 as an example of use) or it may pertain to simultaneity i.e. concurrency of energizations.

The terminology 'said pulse' in claim line 8 lacks antecedence with the 'at least one pulse' precedent terminology.

The term 'possibly' in claim line 9 is intrinsically vague since it is unclear whether the subsequent limitation applies.

The channel submultiple relationship set forth in claim lines 19 - 21 ( 'which number is ....an integer submultiple of said *number of said receiving transducers.*' ) is vague since apparently the integer submultiple relationship exists in relation to the total number of available receivers involved in the compositing of the image, i.e. the 'receiving transducer array' of claim line 9. Alternately stated, the Examiner believes that the latter language should substitute for the language italicized immediately above in both instances of lines 19 - 21 usage.

Since in claim line 12 the back propagation is recited as computed for straight or curved lines or a plane or surface, the later language in claim lines 21 - 22 '...along a whole plane or a part thereof ' is effectively inconsistent with its antecedence. That is, the line 12 language is apparently establishing (by the Examiner's understanding of specification page 1 lines 15-25 and page 9 lines 18-19) that since the array(s) used as transmitters and receivers may either be linear (1-dimensional array) with either a planar or arched emission face ('face' because the single line of transducers has a finite

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elevational height dimension as well as width) in which case the collected backpropagation data is a stack of straight or curved lines of data related to reception delay/reference depth for compositing into a planar image or be planar ( 2-dimensional array) with either a planar or arched surface emission face in which case the collected back-propagation data will apparently be of whole planar or surface sections for stacking into a volume composite. In other words, it appears that the latter line 21 language does not admit of the compositing of data collected via non-planar surfaces.

With respect to claims 9 – 15, in base claim 9 " said receiving signals " lacks antecedence; the claim ambivalently refers to 'at least one...receiving..channel ' claim lines 5 – 6 and to ' a number of channels ' line 10, and to ' a group of receiving transducers..' line 16 whereupon subsequent dependent claim language directed to 'transducer' (singular) lacks strict antecedence since the former term differs in scope from 'at least one transducer' for example which admits of both singular and plural interpretation.

No new matter may be introduced into the specification or claims in resolving this issue.

Dependent claims variously inherit the defects.

### ***Allowable Subject Matter***


Claims 1 - 15 would be allowable in their current scope if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

The following art is cited as of interest: Liu (US6685641) teaches backpropagation of weakly focused waves transmitted from the entirety of an array and received on the entirety of a receiving array for Fourier frequency and/or spatial Fourier transformation. McLaughlin (US6685645) is directed to broad beam excitation and reception for high frame rate imaging. Gollard et al (US6695778) teaches image formation using unfocused wave transmission without transmit or receive beamforming. Thomas, III et al (US5851187) teaches high frame rate imaging using M-sets of encoded signals transmitted simultaneously for M-transmit events with reception onto N-element sets. Ustuner et al, Hossack et al (US6309356 and 6179780) variously increase frame rate by the use of unfocused transmit waves and component receive beam formation. Alexandru (US6821251) teaches repetitive synthetic aperture transmission with optimized multiplexed receive sub-array selection in conjunction with receive beamformation.

Any inquiry concerning this communication should be directed to Jaworski Francis J. at telephone number 571-272-4738.

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Francis J. Jaworski  
Primary Examiner